

Appl. No. : **09/830820**
Filed : **April 27, 2001**

REMARKS

Claims 10-14, 21-26, 31-36 remain pending in the present application. Claims 22 and 32 having been amended herein.

Applicant thanks the Examiner for the allowance of Claims 10-14.

In response to the Office Action mailed September 12, 2003, Applicants respectfully request the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following comments.

Claims Indicated As Allowable Have Been Rewritten

Applicant thanks the Examiner for the indication of the allowability of the subject matter of Claims 22-26 and 32-36. The Examiner objected to Claims 22-26 and 32-36 as being dependent upon a rejected base claim, but indicated that they would be allowable if rewritten in-independent form including all of the limitations of the base claim and any intervening claims. With this Amendment, Claims 22-26 and 32-36 have been rewritten to include all of the limitations of the base independent claim from which they depend, as suggested by the Examiner. Thus, Claims 22-26 and 32-36 are in condition for allowance.

The Applied Combination of Early et al./Moroto et al. Does Not Make Obvious The Hybrid Powered Vehicle Recited By Claims 21 and 32

Claims 21 and 31 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 4,961,151 issued to Early et al., in view of U.S. Patent No. 5,892,346 issued to Moroto et al. Applicants respectfully traverse this rejection.

As stated in the M.P.E.P. §2143, the prior art references must teach or suggest all the claim limitations. Furthermore, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the references or to combine reference teachings. As discussed in detail below, the cited references do not teach or suggest all the limitations of Claims 21 and 31, and there is no suggestion or motivation to modify or combine the cited references.

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The Cited References Do Not Teach or Suggest All The Claim Limitations

Claim 21

Claim 21 recites a hybrid-powered vehicle comprising a vehicle body, a propulsion device configured to propel the vehicle body, first and second power supply sources being different from each other, each power supply source being configured to supply sufficient power to drive the propulsion device, and a controller configured to determine an amount of power available from each of the first and second power supply sources, the controller being configured to calculate an approximate travel range of the vehicle based on the amount of power available from the first and second power supply sources.

Neither Moroto nor Early et. al. teaches all the limitations of Claim 21. In particular, the cited references do not teach the controller being configured to calculate the approximate travel range of the vehicle based on the amount of power available from the first and second power supply sources. In contrast, Moroto teaches a navigation ECU that determines a schedule for consumption of battery power for a distance calculated from *geographic data*, not the amount of power available from the power source. See, e.g., Abstract; col. 5, lines 16-24 and 36-39; col. 7, lines 54-60, col. 8, lines 49-59; col. 11, lines 65-67 to col. 12, lines 1-3; col. 12, lines 16-24.

In one embodiment, the distance calculating means 37 of the navigation ECU 30 receives geographic data and signals as shown in Figure 10. Moroto teaches that a navigation ECU 30 that receives geographic data from a Global Positioning System receiver 32, a gyro sensor 36, and a speed sensor 15, and a terminal 40 (an electric diary with a destination data schedule). See, e.g., Figure 1; col. 4, lines 43-68 to col. 5, lines 1, 2. The navigation ECU 30 calculates the vehicle's current geographic location and a distance between geographic locations based on the aforementioned geographic data, *not* the amount of power available from the power source. (Col. 4, lines 5-8, lines 40-43, col. 5, lines 11-14 and lines 53-55; col. 6, lines 11, 12, 59-63; Col. 7, lines 18, 19).

Moroto also discloses a navigation ECU 50 with a distance calculating means 53 that receives geographic data and signals as shown in Figure 11. The navigation ECU 50 further, e.g., (1) determines a route for travel from map data on a ROM (Col. 9, lines 44-52), (2) calculates a distance of the route (Col. 9, lines 52-54), (3) calculates a distance to the next charge based on geographic data (Col. 10, lines 10-12, 50-53; col. 11, lines 29, 30). The

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distance calculated by the ECU 50 is based on *geographic data* (e.g., maps), not the amount of power available from the power source. Moroto further discloses the ECU 20 which does not calculate distances. Rather, the ECU 20 controls the engine 10 and the motor 14 based on a target residual capacity instruction from the navigation ECU. Col. 8, lines 5-10. Thus, none of the ECUs disclosed by Moroto are configured to calculate the approximate travel range of the vehicle based on the amount of power available from the first and second power supply sources. Instead, Moroto calculates the travel *distance based on geographic data* and then uses those distances to determine a *schedule for battery consumption* before the start of travel.

Moreover, Claim 21 recites the controller configured to determine the amount of power available from each of the *first and second power supply sources*. Moroto does not teach or suggest a system that determines an amount of power available from two different power supply sources. Moroto is directed to using the capacity of a single battery 18 effectively as possible, i.e., ensuring that the capacity of the battery 18 will last until the vehicle will last until the vehicle is recharged in order to achieve the objectives of low-pollution and energy savings. Col. 1, lines 33-36 and 48-51. The Moroto system only monitors one power supply, the battery 18. Thus, Moroto does not teach or suggest a system that determines an amount of power available from two different power supply sources.

Early et. al. does not teach the deficiencies of Moroto. Early et al. teaches a power system for a vehicle including a propulsion device having a battery and a fuel cell. Additionally, Early et al. teaches a method for controlling the connection between the fuel cell and the battery so as to control the recharging of the battery from the fuel cell so as to not damage the battery. Early et al. fails to teach any systems for determining a travel range of the vehicle.

The Examiner ignores limitations of Claim 21 and states that the Moroto system battery analysis mechanism could be used to determine the remaining capacity of the two batteries of Early. Office Action, page 4. However, Claim 21 recites the controller configured to determine the amount of power from each of the *first* and the *second power supply sources* being *different from each other*. Early et. al. discloses batteries 12, 14 that are high power density storage devices. Col. 4, lines 24-32. Early et. al. does not teach or suggest that the battery 12 is different than the battery 14. Moroto teaches that the ECU

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monitors a single battery, not two power source that are different from each other. Advantageously, the hybrid powered vehicle of Claim 21 includes the controller that can correlate data regarding two different power sources and combine this data in a way to provide an approximate travel range of the vehicle. Thus, the Examiner has ignored limitations of Claim 21 because the Examiner has not shown any teaching or suggestion for the controller configured to determine the amount of power from each of the first and the second power supply sources being different from each other. Thus, the Examiner's rejection is improper and Claim 21 is in condition for allowance.

Claim 31

Claim 31 recites a hybrid-powered vehicle comprising a vehicle body, a propulsion device configured to propel the vehicle body, first and a second power supply sources being different from each other, each power supply source being configured to supply sufficient power to drive the propulsion device, and a controller configured to determine an amount of power available from each of the first and second power supply sources, the controller including means for calculating an approximate travel range of the vehicle based on the amount of power available from the first and second power supply sources.

Claim 31 is allowable over the cited references for the many of the same reasons as stated above regarding Claim 21. For example, the cited references do not teach the controller configured to determine the amount of power available from each of the first and second power supply sources. Further, the controller including means for calculating the approximate travel range of the vehicle based on the amount of power available from the first and second power supply sources. Thus, Claim 31 is in condition for allowance.

The Examiner Has Not Shown Any Suggestion or Motivation to Combine Cited References

To establish a prima facie case of obviousness there must be some suggestion or motivation, either in the references or in the knowledge generally available among those of ordinary skill in the art, to modify the reference. In re Vaeck, 947 F.2d 488 (Fed. Cir. 1991). "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." In re

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Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); see also Ecolchem, Inc. v. Southern California Edison Co., 227 F.3d 1361 (Fed. Cir. 2000).

It is well established that when a rejection for obviousness depends on a combination of elements disclosed in prior art references, there must be motivation to combine those particular elements in the prior art *as a whole*. “There must be evidence that ‘a skilled artisan, confronted with the same problems as the inventors and with no knowledge of the claimed invention, *would select the elements* from the cited prior art references for combination in the manner claimed.’” In re Rouffet, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1456 (Fed. Cir. 1998); *see also*, In re Werner Kotzab, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000).

Early et. al. does not provide any teaching, suggestion, or motivation to modify or combine with Moroto. Early et. al. teaches that a control system that utilizes energy from a fuel cell and a pair of batteries based on the *load demand* (e.g., very high sensed load, high sensed load, medium sensed load, low sensed load). For example, as shown in Table I through Table VIII of Early, the control system can take the fuel cell out of the electrical system when its maximum desired energy output is about to be exceeded by load requirements and the batteries are protected from over charging based on the state of charge, load current, and fuel current. See, e.g., Abstract. Thus, the Early et. al. control system uses load demands, not distances, to determine whether, for example, to charge the battery or consume power from the battery.

Moroto, on the other hand, specifically teaches using a calculated travelling distances to determine the *schedule* for battery usage for each leg of the trip to maximize battery use. Thus, Early et. al. would not be motivated to combine his teachings with those of Moroto because Early et. al. is concerned with load demands not schedules for battery usage. Further, Early et. al. measures load demands during power usage. Moroto, by contrast, calculates distances between locations and then determines the schedule of battery usage before the start of travel. Accordingly, Early et. al. would not be motivated to combine his teaching with those of Moroto because Early et. al. is concerned with load demands during travel, not the schedule, which is determined before the start of travel, for battery usage based on calculated distances.

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Moroto does not provide any teaching, suggestion, or motivation to combine with Early. As discussed above, both references teach different systems for controlling consumption of power from power source. However, Moroto uses a schedule based on a distances whereas Early et. al. uses measured load demands. Thus, Clams 21 and 32 are not obvious because the prior art references provide no motivation, suggestion, or teaching for the asserted combination.

CONCLUSION

For the foregoing reasons, it is respectfully submitted that the rejections set forth in the outstanding Office Action are inapplicable to the present claims and specification. Accordingly, early issuance of a Notice of Allowance is most earnestly solicited.

The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicants' attorney in order to resolve such issue promptly.

Respectfully submitted,

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